

RAD

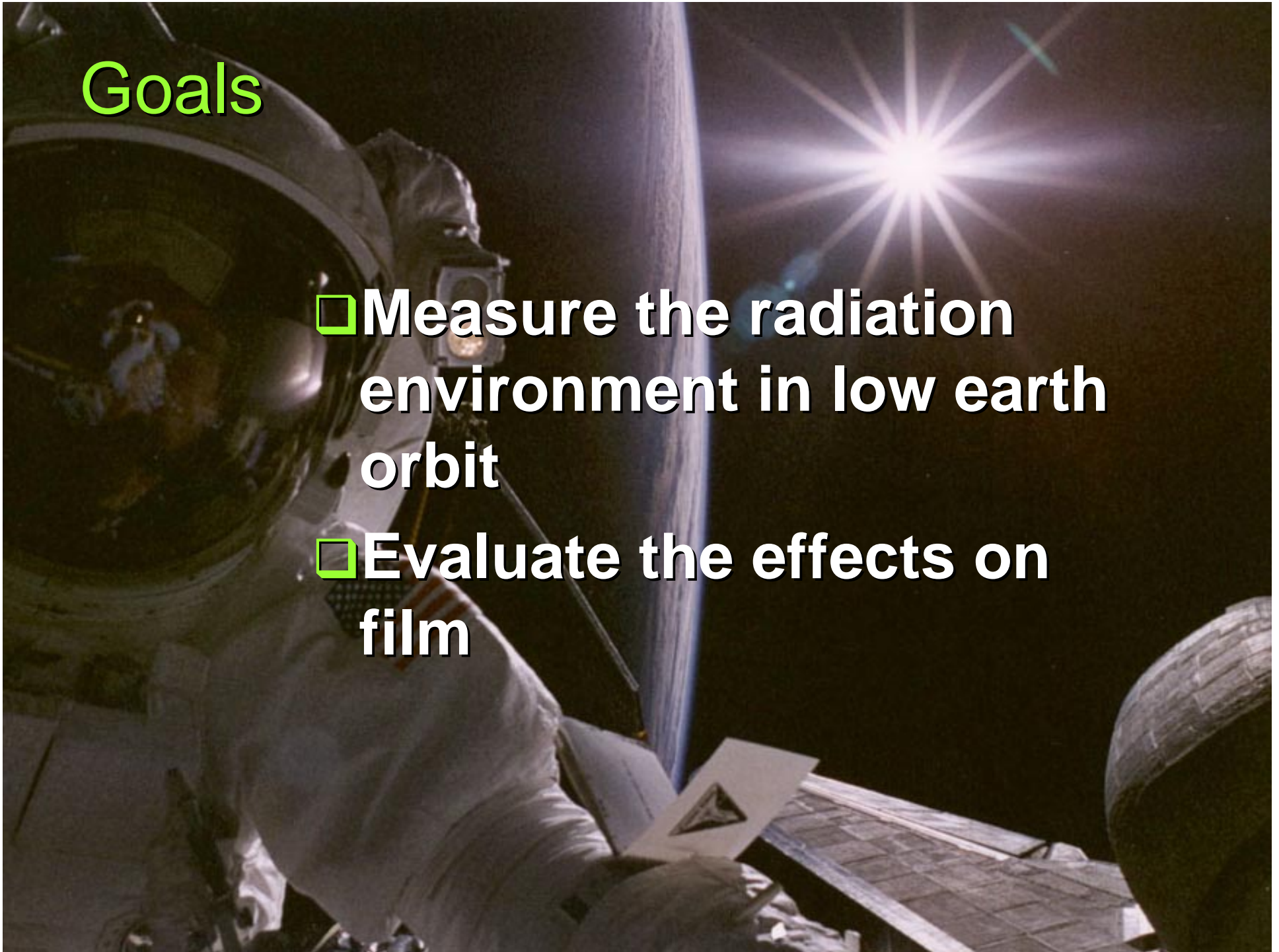
RAD - Radiation Assay Device

By Alexandra Moody
Honor Biology Class
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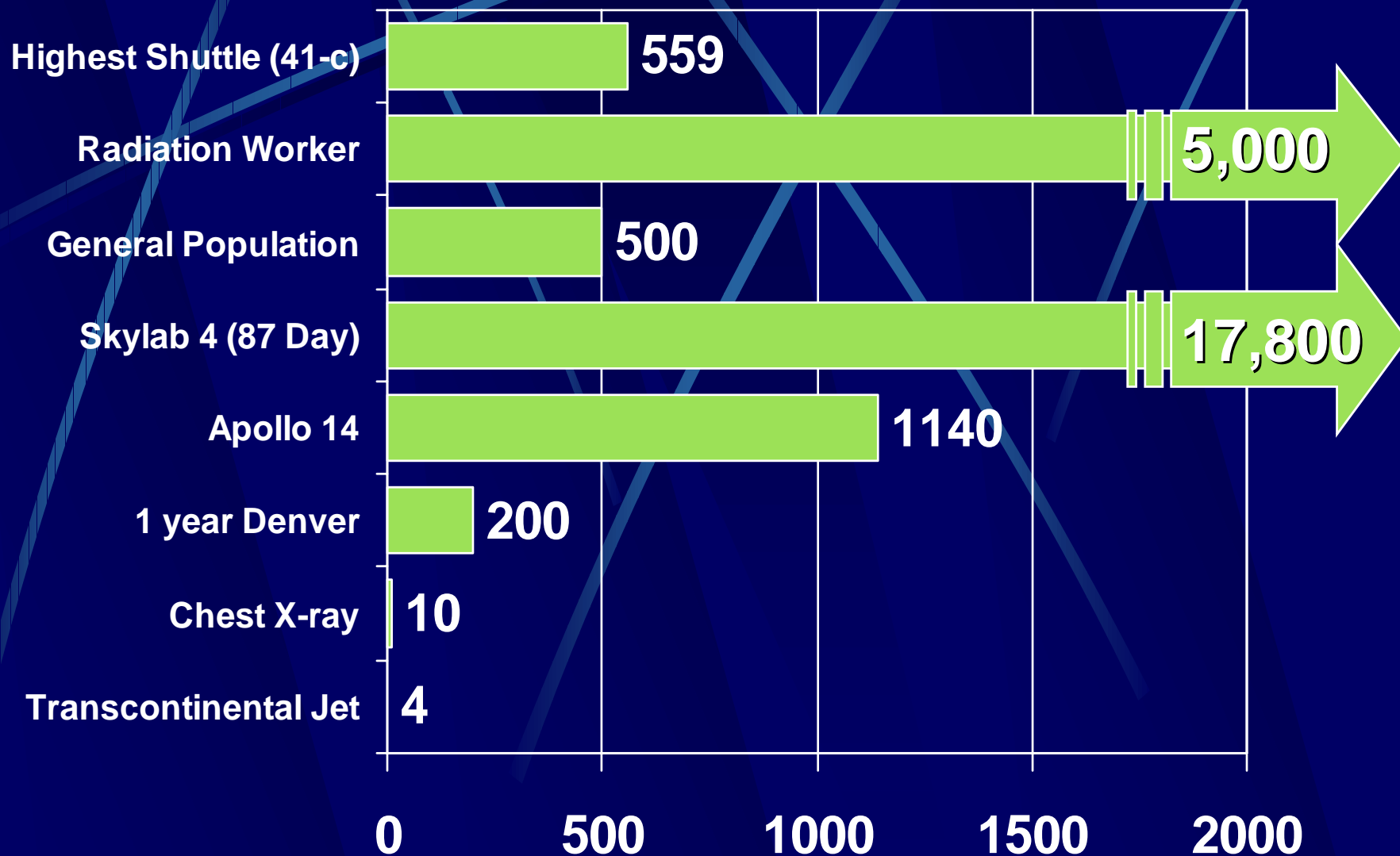


Goals

- ❑ Measure the radiation environment in low earth orbit
- ❑ Evaluate the effects on film

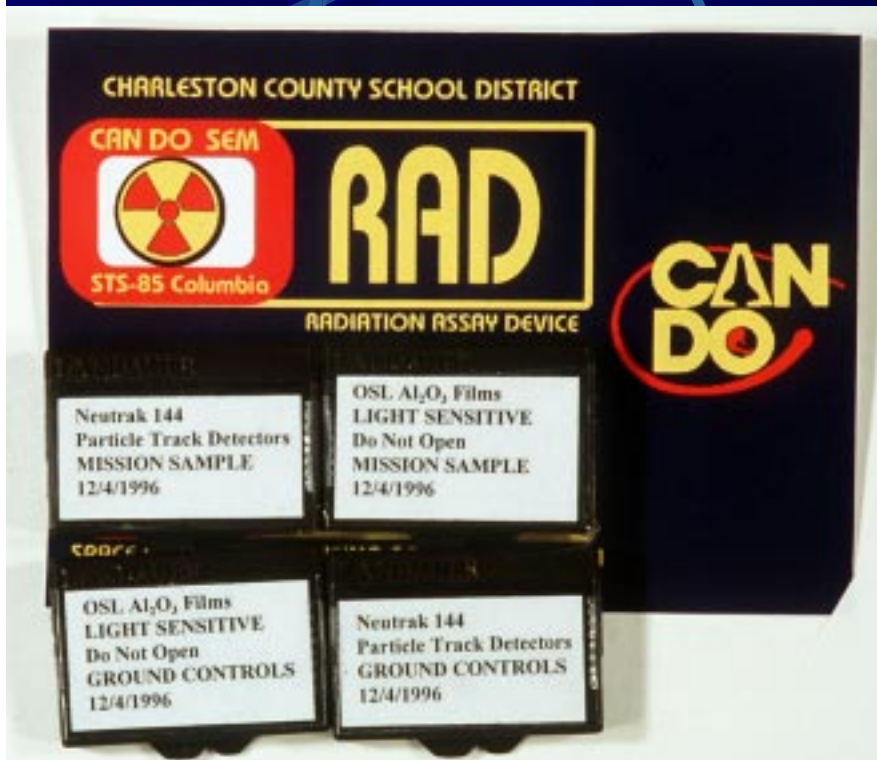


Radiation Exposure

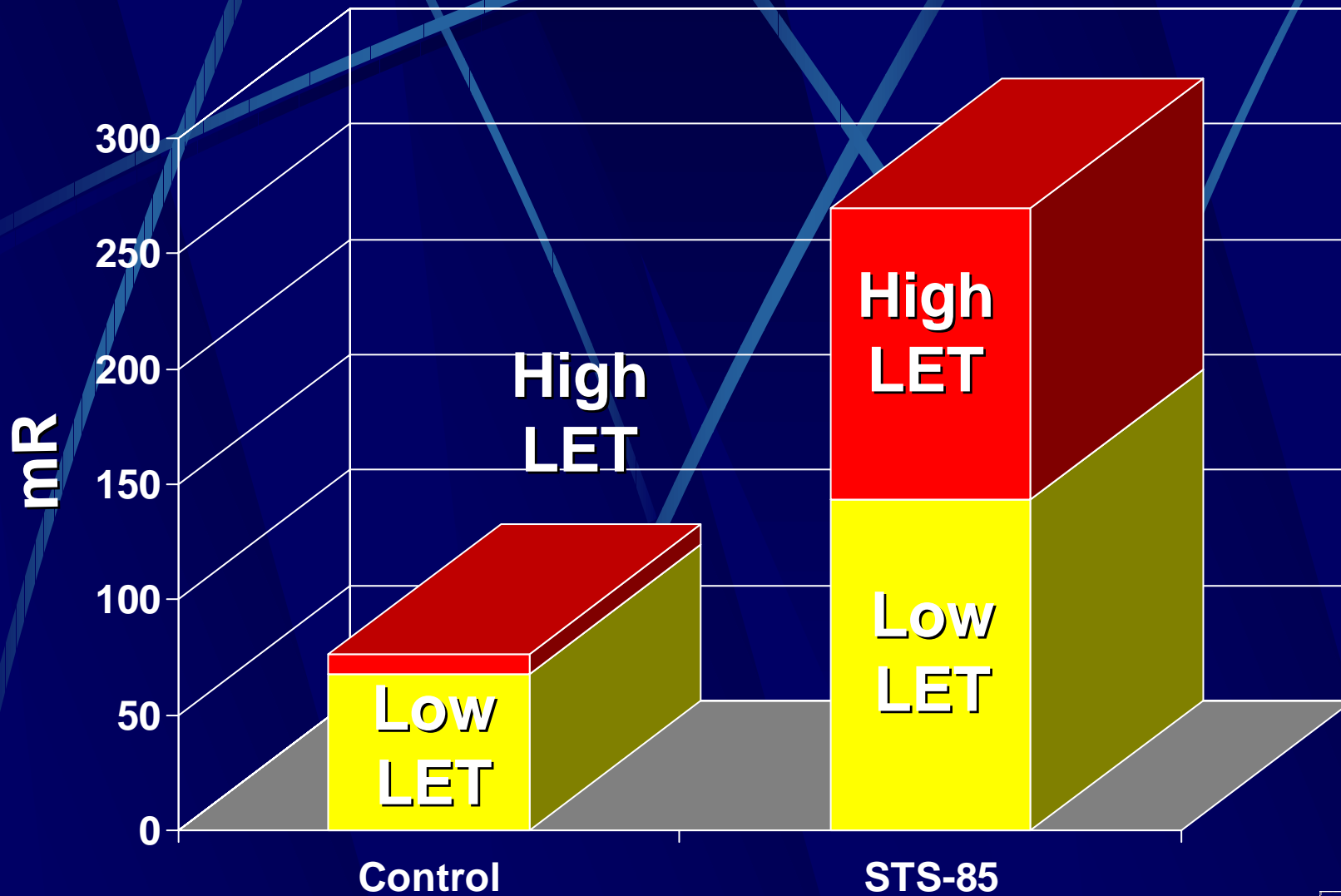


Radiation Dosimeters

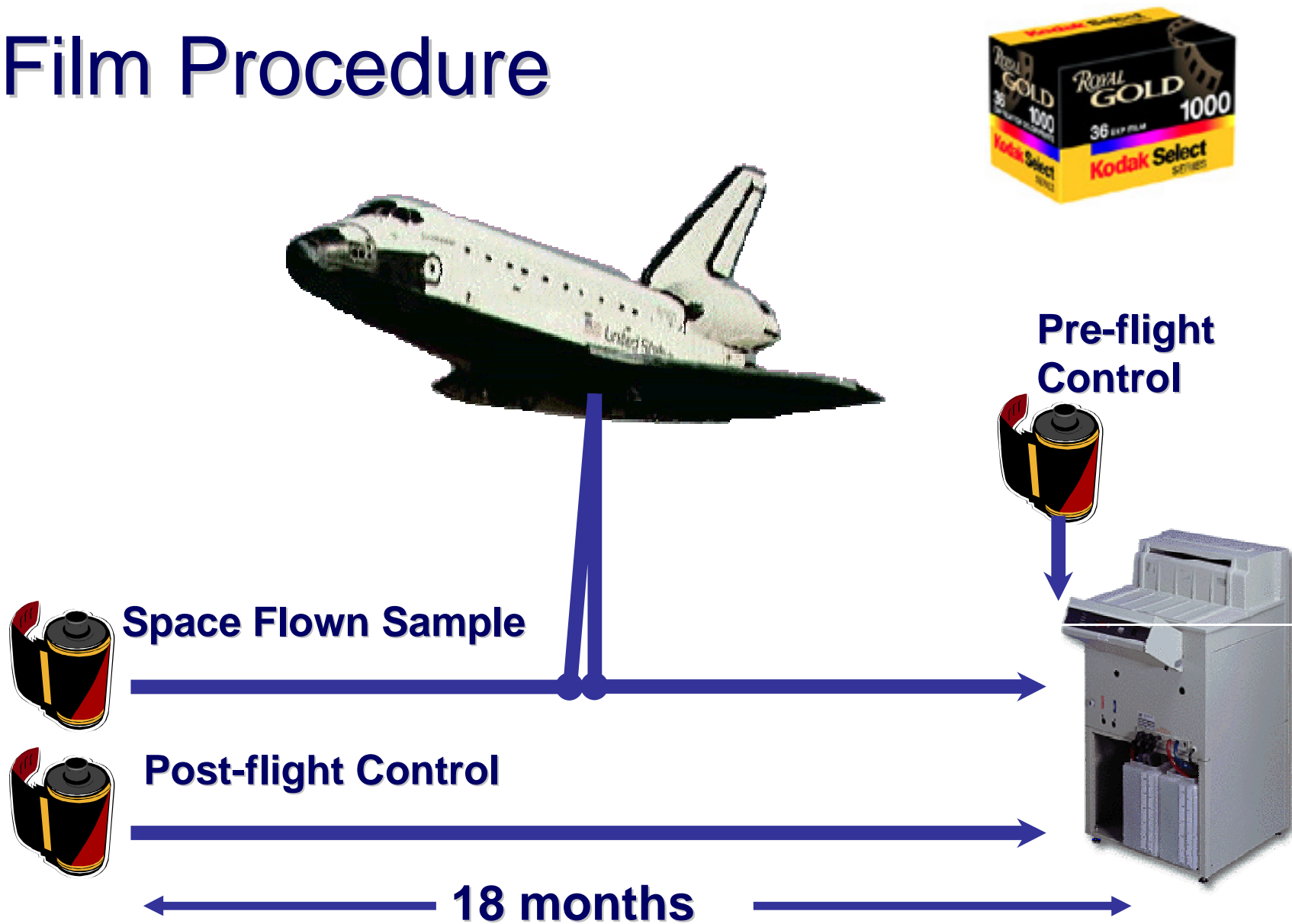
- Flight Samples
 - Particle Track – High LET
 - OSL – Low LET
- Ground Control
 - Particle Track – High LET
 - OSL – Low LET



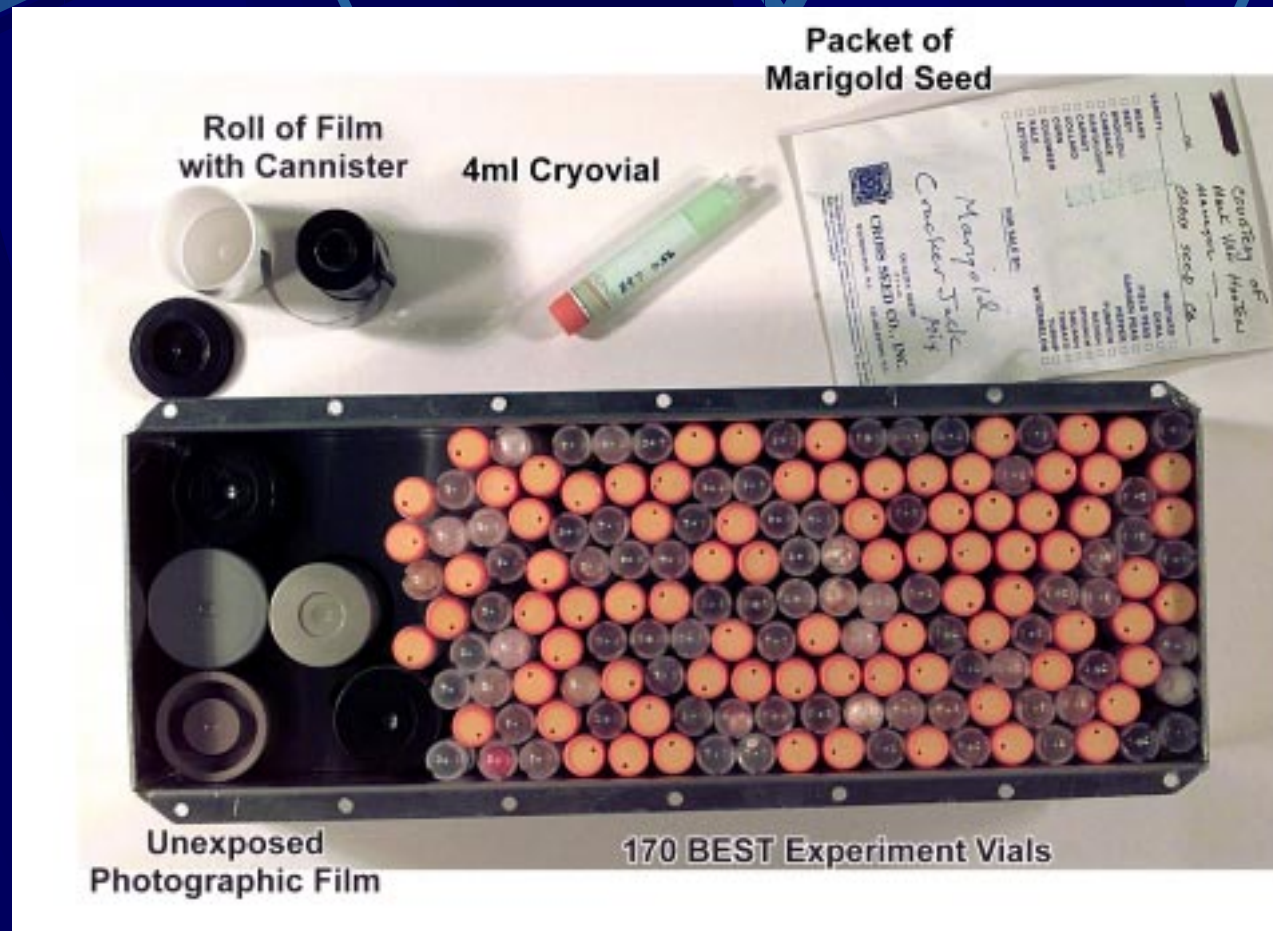
Mean Radiation Dosage



Film Procedure



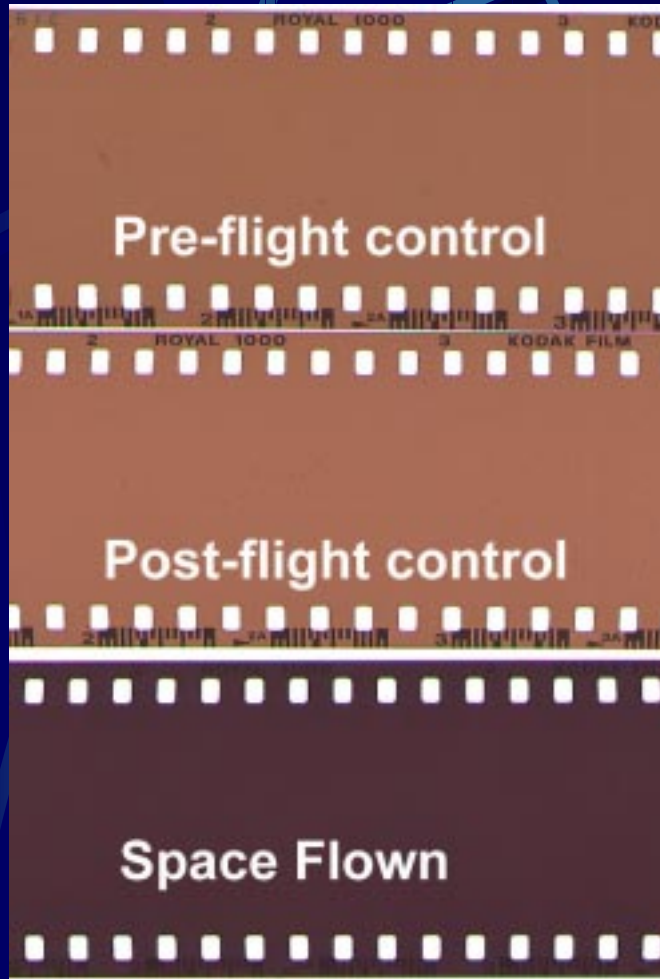
SEM Passive Experiment Housing With Film



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Results of Shuttle Flight



**The space-flown
sample returned
fogged**

The unexpectedly high fogging was due to:

- ☐ Radiation alone ?
- ☐ Long storage time ?
- ☐ Dry nitrogen atmosphere ?
- ☐ Heat exposure ?

OR

- ☐ Some combination of factors ?

Verifying the Film Results

Dr. Don Fry of the MUSC Department of Radiology set up a test to expose film samples to measured x-ray radiation doses.

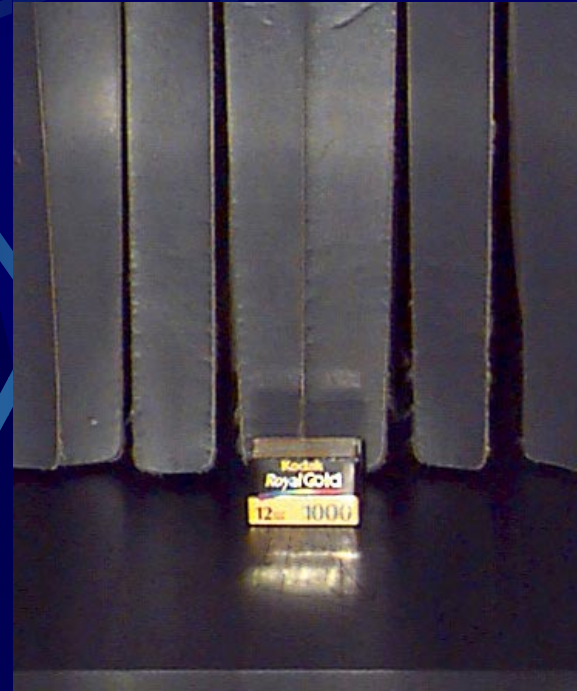
328 mR

1186 mR

4650 mR



The luggage X-ray machine at Charleston International Airport was also used to test the effects of radiation.



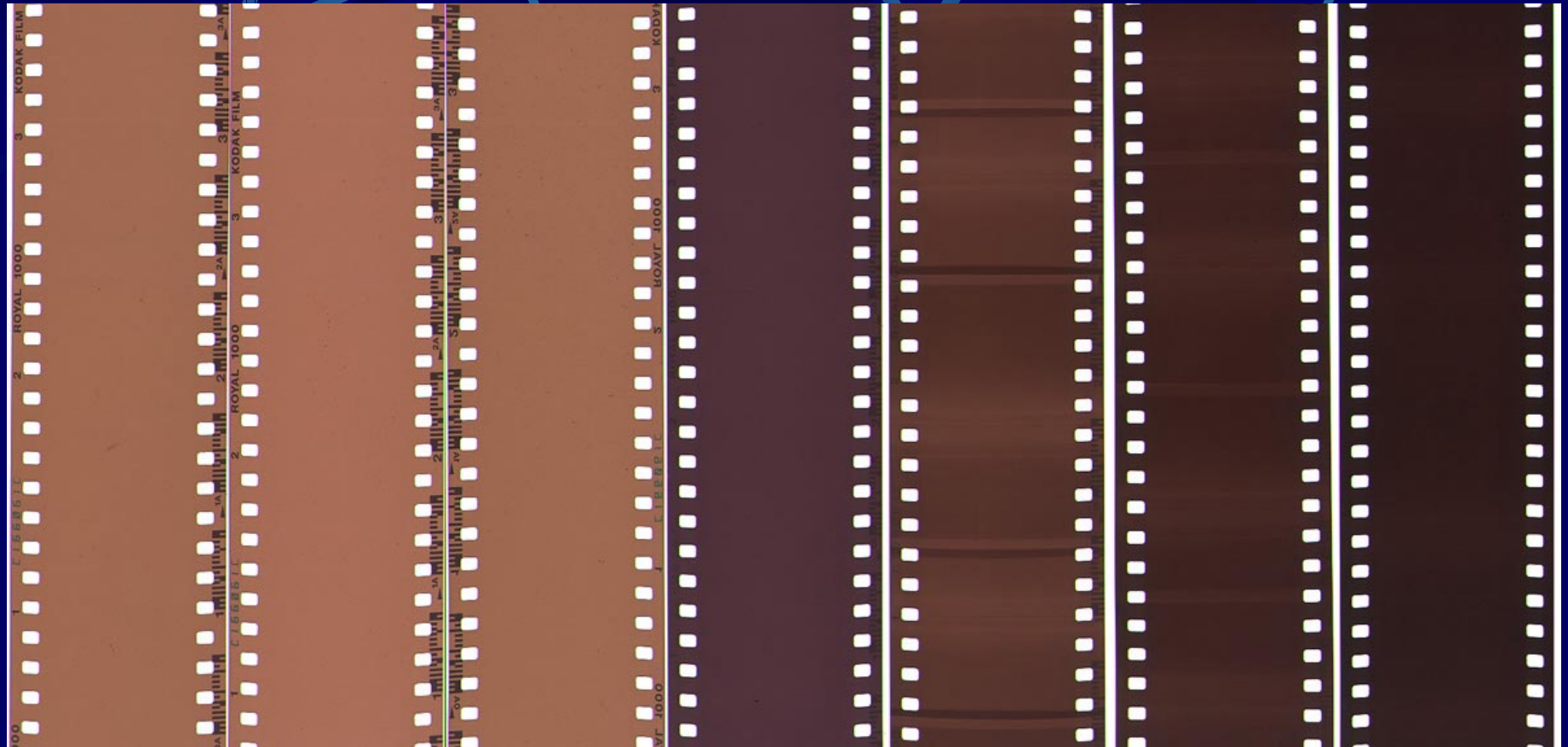
Note: ROYAL GOLD 1000 Film is very sensitive to environmental radiation; expose and process it promptly. Request visual inspection at airport x-ray inspection stations. Some x-ray equipment may fog this film.

(from Kodak film technical information)

Film Results

Control

Medical X-Ray



Pre

Post

Airport

STS-85

328

1186

4650

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mR



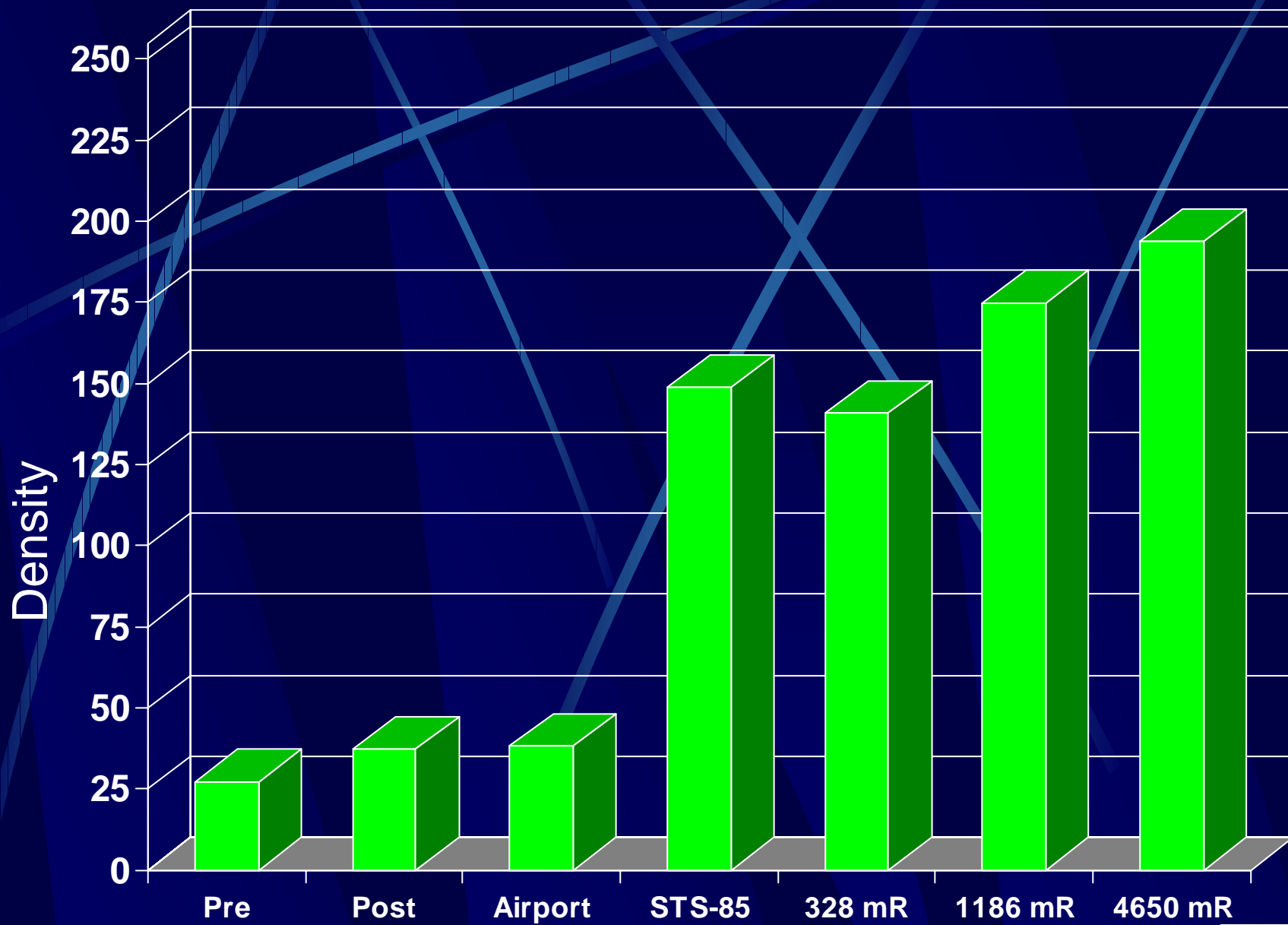
MUSC Department of Pathology Image Analysis Core Facility



Film scanned.



Density measured.



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Conclusions

The data supports the evidence that the film was affected by radiation.

Applications for Space Travel

- ❑ High-speed photographic films need special shielding .
- ❑ Choose lower sensitivity films
- ❑ Test to verify the choice

Thank You

CAN DO Project



For further information,

www.musc.edu/cando

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